RTLS FOR NUCLEAR POWER PLANTS

Orion™ Real-Time Location System

Orion Real-Time Location System, or RTLS, helps nuclear plants maximize efficiency in outage planning and daily operations.

A SINGLE SOLUTION FOR COMMON CHALLENGES

Lost Critical Path Time

- Track high value or critical path items
- Locate missing tools or equipment
- Locate personnel and manage contractors
- Custom reports to assist with ALARA planning

High Dose Rate Alarms

- Visualize dose rate zones with mapping
- Track dose rates, even in dynamic environments
- Eliminate intensive survey hours for dose rate mapping

Safety

- Provide accountability for high radiation evolutions and muster points
- Utilize two-way communication
- Use Geofencing to alert workers entering areas of high dose rates, high airborne or low oxygen
- Use system for training and simulation

KEY BENEFITS OF ORION RTLS

Asset Tracking

Track the location of essential tools and equipment. An asset tag is attached to critical items such as replacement components, tools, and filtration units.
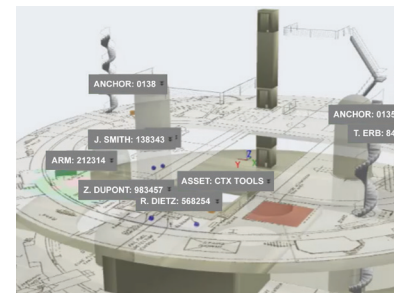
Personnel Monitoring and Dose/Rate Tracking

Workers will wear the newly designed LTx module with a DMC 3000™ dosimeter, providing real-time location, dose, and dose rate information for each worker.

Dose Rate Mapping

Orion RTLS uses location and radiological data to create composite heatmaps of dose rates across an area. Parameters for dose rate gradients, refresh rates and peak and average data are customizable in Orion Studio software.

Geofencing and Dynamic Exclusion Zones

Virtually fence off areas of high radiation concern and restrict zone access for certain personnel only. Set warning and alarm zones to alert central monitoring and notify workers via their dosimeter (optional). Dynamic exclusion zones are geofences set to be triggered by an area or airborne monitor.

Orion™ Real-Time Location System
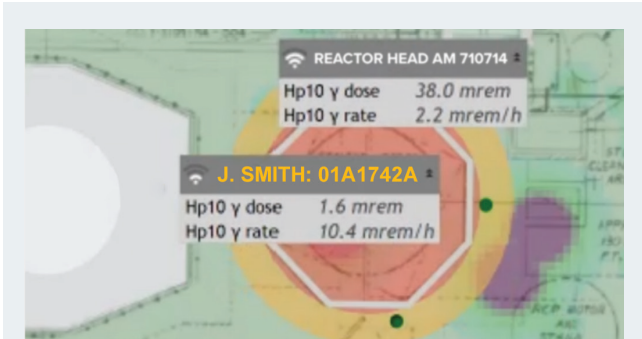
Worker J. Smith (01A1742A) has crossed into the restricted warning zone set by the central monitoring station in Orion Studio software.

Geofencing with Warning

Use geofencing to alert workers when entering areas of danger such as when entering areas of high dose rates, high airborne or even low oxygen.

Dose Rate Mapping

Purple circles indicate areas of high dose rates. Parameters for mapping can be set in Orion Studio software.

SYSTEM COMPONENTS

Dosimeter

DMC 3000 Dosimeter with LTx Module

Orion RTLS utilizes the established technology of the DMC 3000™ dosimeter, fitted with an LTx module. The LTx module supports the transmission of radiological information and location coordinates, tracking the wearer's location within about one (1) meter. The LTx communicates dose rate and location data to the Orion RTLS system to facilitate real-time visualization.

Asset Tag

An asset tag can be fixed to critical spare parts, large tools and equipment to track their location throughout a monitored facility. Asset tags transmit location data, eliminating challenges caused by lost equipment. Asset tags are rugged, watertight, and offer a two-year battery life.

Orion RTLS Asset Tag

Anchor

Anchors are placed throughout the monitored area to capture and relay location data to the central monitoring station. Installation is simple, using Cat5 cables utilizing Power over Ethernet (PoE). For temporary installations, each anchor has magnetic mounts for rapid deployment and removal.

Orion RTLS Anchor

Orion Studio Software

Orion Studio software, running at central monitoring, provides real-time location visualization of:

- Worker dose and rate information and location
- Asset tag locations
- Geofences
- Dose rates (with mapping)

Ultra-Wideband (UWB) Technology

Orion RTLS is based on ultra-wideband, or UWB, which is a radio-based communication technology for short-range, fast and stable transmission of data. Unlike traditional radio technologies (like Bluetooth® or WiFi), UWB operates with the signal's Time of Flight (ToF) rather than Received Signal Strength Indication (RSSI), making the technology much more precise and enabling very exact ranging measurements.

To learn more about Orion RTLS, contact your local account manager or visit **orion.mirion.com**

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